

# Paper 1 - Section B – The living world – Tropical Rainforests

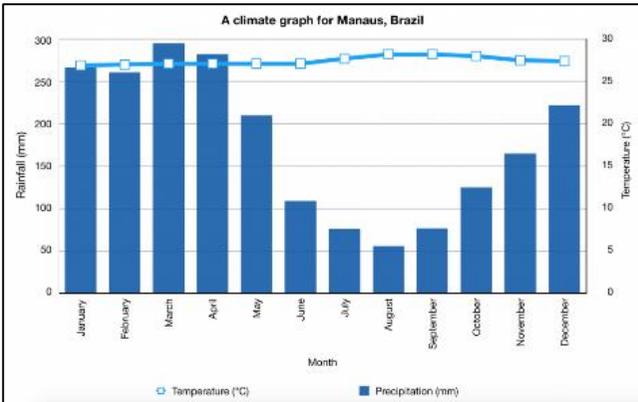


## Tropical rainforest Locations

Tropical Rainforest are found along the equator due to the higher heat and rainfall that is found along here (Global atmospheric circulation).

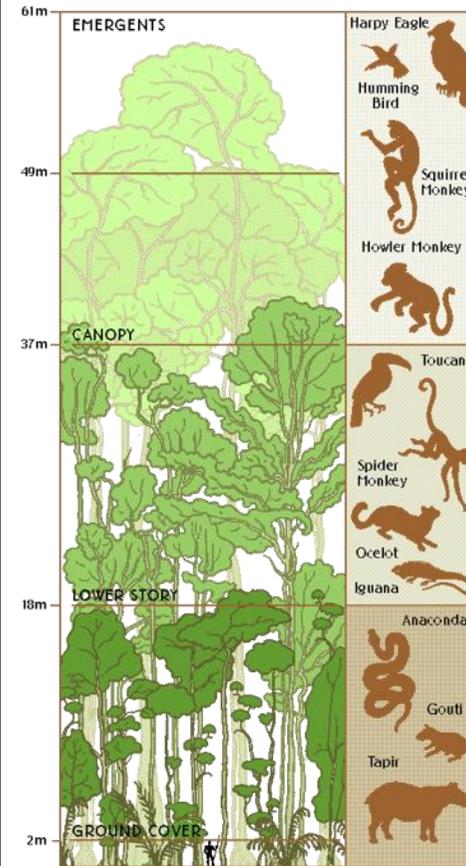
## Tropical rainforest climate

As a result, they have a high temperature (ranging from 20-30°C) and a high amount of rainfall (over 2000mm) all year round. This is known as a humid climate. This means that rainforests only have 1 season per year.



## Plant adaptations

- Up to 75% of light is lost from on the lowest layer due to dense vegetation. Competition for light causes trees to grow fast, tall and straight. **Buttress roots** support these tall trees by growing above the ground to offer additional support.
- Plants on the forest floor are shade tolerant and able to cope in the darker conditions. The Fan palm also has a large leaves to increase its ability to photosynthesise.
- Lianas** wrap themselves around other trees to gain access to light. This allows them to grow towards the sunlight quicker and helps them survive.
- Plants have **drip tips** which gets rid of access water.



## Animal adaptations

- Spider monkeys** have a prehensile tail that allows them to cling to branches and offer better balance.
- Poison dart frogs** are a bright colour to warn predators away. This prevents them from being eaten.
- Jaguars** have spotted fur. This camouflages them the forest floor and allows them to better hunt prey.
- The **harpy eagle** has a shorter than normal wingspan that allows them to easier fly between the trees in the rainforest.
- Insects like the **leaf butterfly** use mimicry to blend into their surroundings and hide from predators.

## Interdependence of climate, water, soils, plants, animals and people

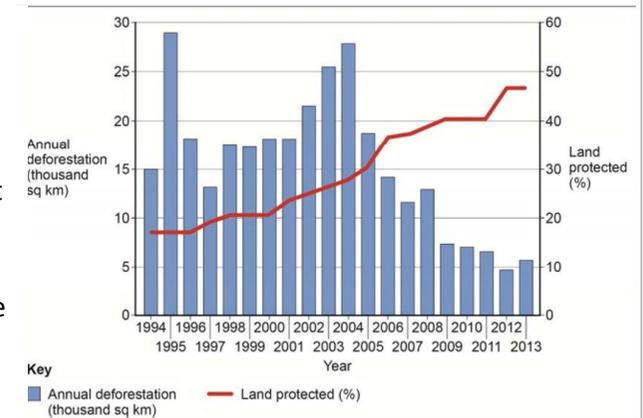
Small changes to biotic and abiotic factors can have serious knock on effects

- Biomass is the largest nutrient store and the biggest transfer is from soil to biomass
- Fertility s quickly lost from the soil if trees are cut down
- Poor soils due to leaching (the washing away of nutrients)
- Thick litter layer. Rapidly breaks down due to climate
- Warm humid climate means rapid plant growth

## Deforestation

Deforestation is the large scale cutting down of trees.

The rate of deforestation around the world is slowly decreasing. But some countries, like Indonesia, have increased in recent years.



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## The Amazon rainforest

The Amazon is found in South America and is spread across 9 different countries (the largest amount being found in Brazil).

1 in 10 species on the plant is found in the Amazon rainforest

## Impacts of deforestation

### Economic development

- Brings in jobs and income
- Destroys resources in the long term
- Livelihoods of locals destroyed
- 2008 \$6.9 billion from cattle
- Rubber tappers lost jobs
- Mercury from gold mining poisons fish

### Soil erosion

- Land left unprotected from heavy rain leads to landslides and flooding
- Nutrients are washed away decreasing nutrients in the soil
- Rivers silt up

### Contribution to climate change

- Trees cut down change the water cycle and make it drier and warmer
- Rainforests are the lungs of the earth (the amazon produces 20% of the worlds oxygen) and so when deforested there is ore carbon dioxide in the air and less oxygen. Burning also releases carbon to the air (Greenhouse effect)

### Others

- Loss of biodiversity - 137 species a day
- Loss of indigenous tribes (90 since 1990)
- Tribal people moving to towns and cities and have drugs and alcohol issues. Loss of indigenous knowledge
- Conflicts between developers and indigenous people

Causes of deforestation	Definition and facts
Commercial farming	Farming (Cattle and crops) to sell produce for a profit (\$6.8 billion made from cattle farming in 2008) Causes 80%+ of all deforestation in the amazon rainforest as people cut down trees to make space to graze cows.
Logging	The business of cutting down trees and transporting the logs to sawmills. Selective logging and clear felling. Teak and Mahogany worth the most
Mineral extraction	The removal of mineral resources from the earth. Gold, Bauxite, Oil and gas. Pollutes rivers and air Today, around 50,000 hectares of land are used for gold mining.
Subsistence farming	A type of agriculture producing food and materials for the benefit only of the farmer and his family
Road Building	Rainforest is cut down to make way for roads. 4000km long Trans Amazonia Highway built 1970s. Opened up rainforest
Energy Development	Vast areas of the rainforest are cut down to make way for Hydroelectric power stations The Balbina dam flooded 930miles <sup>2</sup> once fully built.
Settlements	Government resettled poor citizens and gave them land. Trees are cut down to make space for this.

## Importance of the rainforest

The Tropical rainforest is important for the following reasons

- **Medicine**
  - Around 25% of all medicines come from rainforest plants
- **People\_**
  - Indigenous (people who have always lived in an area) people live in harmony with the rainforest. This is their home.
- **Biodiversity\_**
  - Tropical rainforests contain half all the plants and animals in the world.

## Sustainable management of the tropical rainforest

STRATEGY	KEY FACTS
<b>Selective logging and replanting</b>	<ul style="list-style-type: none"> <li>• Only fell fully grown trees on 30 – 40-year cycle</li> <li>• Replanting – collect seeds from primary forest; grow in nurseries and replant</li> <li>• Forest Stewardship Council (FSC) – Shows the trees have come from a source where they are replanted meaning you do not lose the overall amount.</li> </ul>
<b>Conservation and education</b>	<ul style="list-style-type: none"> <li>• Education of local's key – less likely to cut down trees if they know the importance.</li> <li>• Conservation - The Tumucuwobi national park is 3 million Km2 of protected land where deforestation cannot take place.</li> </ul>
<b>Ecotourism</b>	<ul style="list-style-type: none"> <li>• Minimises damage to environment and benefits locals</li> <li>• Small visitor numbers</li> <li>• Waste and litter disposed of properly</li> <li>• Locals employed so get paid via tourism rather than to cut down trees.</li> </ul>
<b>International agreements about use of tropical hardwoods</b>	<ul style="list-style-type: none"> <li>• International Tropical Trade Agreement 2006 and 2011 – restricts trade in hardwood from rainforests</li> <li>• Needs to be felled from sustainably managed areas and stamped with registration numbers</li> </ul>
<b>Debt reduction</b>	<ul style="list-style-type: none"> <li>• Debt for nature swaps – in 2010 USA converted debt of \$13.5 million from Brazil and used the funds to protect the rainforest</li> <li>• HICs wipe off debts of debts of LICs to protect the rainforest.</li> </ul>